



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,872	01/23/2006	Peter Haselbacher	64771(51994)	7342
21874 7590 12/11/2007 EDWARDS ANGELL PALMER & DODGE LLP P.O. BOX 55874 BOSTON, MA 02205			EXAMINER PICKARD, ALISON K	
			ART UNIT	PAPER NUMBER
			3676	
			MAIL DATE	DELIVERY MODE
			12/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/565,872

Applicant(s)

HASELBACHER ET AL.

Examiner

Alison K. Pickard

Art Unit

3676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                 | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Krenkel (6,358,565).

Krenkel discloses a seal ring (col. 2, lines 49-50) comprising a composite material such as fiber reinforced SiC material (see col. 2, line 63 through col. 3, line 59). The fibers can be carbon or SiC fibers. Requiring the ring to be for a mechanical seal in a jet engine is intended use. This ring is capable of such use.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krenkel in view of Allaire (5,177,039).

Krenkel discloses a seal ring comprising a substrate of fiber-reinforced SiC material and a coating/surface layer of fiber-reinforced SiC composite material. Krenkel discloses the thickness of the coating can be within 0.2 to 2mm, which includes the claimed range. Krenkel

discloses a fabric of fibers can be provided. Krenkel appears to disclose at least unaligned fibers, but appears to be silent with respect to aligned fibers. Allaire teaches a fiber-reinforced ceramic (such as carbon or SiC) material. Allaire teaches that the fibers can be aligned to provide planar stiffness and strength in a certain direction or unaligned to provide multi-axial stiffness and strength (col. 2, lines 55-64). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the alignment of the fibers based on the desired stiffness and strength. Regarding claim 9, the winding process is a process limitation given little patentable weight in a product claim.

5. Claims 4, 5, 7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krenkel.

Krenkel does not appear to disclose the claimed ranges required by these claims. It is not considered inventive to discover the optimum or workable ranges by routine experimentation absent some showing of criticality. See *In re Aller*, 105 USPQ 233, 235 (CCPA 1955). Further, using such volume ranges in fiber reinforced ceramic materials is known, evidenced by Bauer '938. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the material using these ranges.

6. Claims 1-5, 7, 12-16, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sieghartner (5,934,683) in view of Krenkel.

Sieghartner discloses a mechanical face seal capable of being used in a jet engine comprising a rotating ring 15 and a stationary ring 20. The rotating ring can be a SiC material and the stationary ring is carbon graphite. One of the seal rings has a pumping structure 25 in a seal face. Sieghartner does not appear to specifically disclose the ring 15 comprises a fiber

reinforced SiC material. Krenkel teaches an improved sealing ring comprising a fiber reinforced SiC composite base and a fiber reinforced SiC coating. This ring provides an improved sealing life with practically no wear. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the ring 15 of Sieghartner with the ring taught by Krenkel to extend sealing life and prevent wear.

Regarding claims 4, 5, 7, and 16, Krenkel does not appear to disclose the claimed ranges required by these claims. It is not considered inventive to discover the optimum or workable ranges by routine experimentation absent some showing of criticality. See *In re Aller*, 105 USPQ 233, 235 (CCPA 1955). Further, using such volume ranges in fiber reinforced ceramic materials is known, evidenced by Bauer '938. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the material using these ranges.

7. Claims 6, 8-10, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sieghartner in view of Krenkel as applied to claims 1 and 13 above, and further in view of Allaire.

Krenkel appears to disclose at least unaligned fibers, but appears to be silent with respect to aligned fibers. Allaire teaches a fiber-reinforced ceramic (such as carbon or SiC) material. Allaire teaches that the fibers can be aligned to provide planar stiffness and strength in a certain direction or unaligned to provide multi-axial stiffness and strength (col. 2, lines 55-64). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the alignment of the fibers based on the desired stiffness and strength.

Regarding claim 9, the winding process is a process limitation given little patentable weight in a product claim.

*Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alison K. Pickard whose telephone number is 571-272-7062. The examiner can normally be reached on M-F (9-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alison K. Pickard  
Primary Examiner  
Art Unit 3676

